Forest Development Research Trust Fund

Annual Report 1981-82

Alberta
ENERGY AND
NATURAL RESOURCES
Forest Service

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Alberta
ENERGY AND
NATURAL RESOURCES
Forest Research Branch

215 McLeod Avenue, Postal Bag 6343, Spruce Grove, Alberta, Canada T0E 2C0 403/962-8700

The Hon. John Zaozirny
Minister of Energy and Natural Resources
319 Legislative Building
Edmonton, Alberta
T5K 2B7

Sir:

I have the honor to submit the Annual Report of the Forest Development Research Trust Fund for the fiscal year ended March 31st, 1982.

Respectfully submitted,

J. Soos
Chairman of the Advisory Council
Forest Development Research
Trust Fund

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SUMMARY OF ACTIVITIES

A total of six new projects and two renewed projects were financed from the Forest Development Research Trust Fund during the fiscal year. Three projects were completed and final reports submitted.

New projects covered several major problem areas in forestry such as: learning more about the physical properties of aspen wood, better chip utilization produced by sawmills, economic consequences of forest land losses to non-timber uses, and protection of young forests against snowshoe hares. Snowshoe hares have high population cycles every 9-10 years and the increased numbers cause tremendous damage to young trees. However, there is no satisfactory and economical protection method currently available to forest managers. The new project appears to provide a fresh approach to minimize the snowshoe hare damage in both naturally and artificially regenerated young forests.

I would like to express my sincere thanks to the members of the Forest Research Advisory Council for reviewing and providing constructive criticism of submitted research proposals.

FOREST RESEARCH ADVISORY COUNCIL

CHAIRMAN

J. Soos
Director
Forest Research Branch
Alberta Energy and Natural Resources
Spruce Grove, Alberta

MEMBERS

J.A. Brennan
Assistant Deputy Minister
Alberta Forest Service
Alberta Energy and Natural Resources
Edmonton, Alberta

J.M. Campbell
Member of the Legislative Assembly
Caroline, Alberta

C.A. Dermott
Director
Reforestation and Reclamation Branch
Alberta Energy and Natural Resources
Edmonton, Alberta

D.H. Fregren
Director
Timber Management Branch
Alberta Energy and Natural Resources
Edmonton, Alberta

Dr. R. Green
Director
Policy Development and Evaluation
Alberta Research Council
Edmonton, Alberta

A.D. Kill
Director
Northern Forest Research Centre
Edmonton, Alberta

Dr. J. Beck Jr.
Acting Associate Dean
Department of Forest Science
University of Alberta
Edmonton, Alberta

C.B. MacDonald
Staff Forestry Manager
Procter & Gamble
Cellulose Ltd.
Grande Prairie, Alberta

A. Rytz
General Manager
Alberta Forest Products
Association
Edmonton, Alberta

Dr. H.P. Sims
Research Manager
Alberta Environment
Edmonton, Alberta

M.C. Summers
Woodlands Manager
Blue Ridge Lumber (1981)
Ltd.
Whitecourt, Alberta

J.C. Wright
Chief Forester
St. Regis (Alberta) Ltd.
Hinton, Alberta

COMPLETED PROJECTS

ERODIBILITY POTENTIAL FOR SOIL MAPPING UNITS

INVESTIGATOR: Dr. D.J. Pluth, University of Alberta

NATURAL GENETIC VARIATION OF FOREST TREES IN ALBERTA

INVESTIGATOR: Dr. B.P. Dancik, University of Alberta

HYDROLOGY OF MIXED DECIDUOUS CONIFEROUS WETLAND SITES IN NORTHERN ALBERTA

INVESTIGATOR: Dr. R.L. Rothwell, University of Alberta

NEW PROJECTS

VARIATION OF ANATOMICAL AND PHYSICAL PROPERTIES OF ASPEN IN ALBERTA

INVESTIGATOR:	Dr. M.M. Micko, University of Alberta
DURATION OF PROJECT:	Five years
OBJECTIVES:	The objective is to establish basic information about the variation of wood specific gravity and fibre length in naturally occurring aspen clones in Alberta.
PROGRESS:	A total of 15 aspen clones were delineated near Whitecourt. Wood samples were collected from individual clones to determine specific gravity and fibre length. It was found both the specific gravity and fibre length of individual clones were highly variable. The difference between the lowest and highest specific gravity was 0.065 units. The range of fibre length varied from 0.65 mm to 1.0 mm. Results also revealed that it is possible to select clones with high specific gravity and longer than average fibre length.
FUTURE WORK:	Delineation of a similar number of aspen clones near Slave Lake and determination of specific gravity and fibre length of selected aspen clones.

SAWMILL SCALE AND RESIDUE UTILIZATION

INVESTIGATOR:	Dr. W.E. Phillips, University of Alberta
DURATION OF PROJECT:	Two years
OBJECTIVES:	The objectives were to determine the return on investment for chipping equipment, analyse the variation in capital efficiency of chipping equipment with respect to size and location of sawmill and identify constraints in chip production including pricing policies of pulpmills.
PROGRESS:	A survey was carried out in sawmills producing chips for pulpmills during 1981 summer. Data were collected regarding chip production and transportation costs to pulpmills based on sawmill size and distance to pulpmills.
FUTURE WORK:	When cost functions and chip price information are determined the return on investment will be calculated. At that time the impact of chip price on the chip utilization will be demonstrated. The final results will be presented in the form of a M Sc. thesis.

LIFTING OF BARE ROOT STOCK - A SURVEY OF AVAILABLE INFORMATION

INVESTIGATOR:	Dr. K.O. Higginbotham, University of Alberta
DURATION OF PROJECT:	One year
OBJECTIVES:	The objectives were to prepare an annotated bibliography on bare root seedling lifting in the northern nurseries, describe existing nursery practices and identify needs for further research based on literature survey.
PROGRESS:	Literature survey was completed and preparation of report is in progress.
FUTURE WORK:	Completion of final report.

ECONOMIC CONSEQUENCES OF FOREST LAND LOSSES TO NON-TIMBER USES IN ALBERTA WITH PARTICULAR REFERENCE TO AGRICULTURE

INVESTIGATOR:	Dr. W.E. Phillips, University of Alberta
DURATION OF PROJECT:	Three years
OBJECTIVES:	The objectives were to identify and describe recent forest land use changes from timber and related uses to other land uses with particular emphasis on agriculture. Economic analytical techniques and procedures used in assessing land use changes will be examined and modified. Alternative forest land uses will be examined in an economic framework including consequences.
PROGRESS:	The progress on this project was modest due to late application and subsequent approval. A Ph D candidate was recruited and an appropriate methodology developed for the project, including a detailed literature survey.
FUTURE WORK:	Methodology for agricultural-forestry land use tradeoffs will be developed. Several background tasks will be performed, such as historical description of public land uses, recent trends in the use of public lands for timber production and harvest, and future potential. Similar information will be collected for recreational use as well.

ISOLATION AND CHARACTERIZATION OF ANTIFUNGAL SUBSTANCE(S) PRODUCED BY *SCYTALIDIUM UREDINICOLA*, A HYPERPARASITE OF *ENDOCRONARTIUM HARKNESSII*, THE WESTERN GALL RUST

INVESTIGATOR:	Dr. M.A. Pickard, University of Alberta
DURATION OF PROJECT:	One year
OBJECTIVES:	The objectives were to demonstrate the ability of compound(s) produced by S. uredinicola to inhibit the germination of E. harknessii spores *in vitro*, and to isolate and purify the active compounds. The effectiveness of these compounds will be tested *in vivo* against the western gall rust on lodgepole and jack pine as a means of biological control.
PROGRESS:	It was found that *Scytalidium aurantiacum* (694) produced a high molecular weight component which lyses E. harknessii spores. S. uredinicola (isolates 677 and 695) appeared very similar, inhibited germination and were separated on chromatography.
FUTURE WORK:	Isolation, identification and characterization of compounds produced by S. *aurantiacum* and S. uredinicola which inhibit spore germination of western gall rust will be conducted.

DEVELOPMENT OF TIMED-RELEASE BIOLOGICAL REPELLENTS TO CONTROL HARE DAMAGE TO FORESTRY PLANTATIONS IN ALBERTA

INVESTIGATOR:	Dr. T.P. Sullivan, Northwest Ecological Animal Research Ltd.
DURATION OF PROJECT:	Four years
OBJECTIVES:	The objectives were to prepare bioassay screening of predator fecal/scent gland odors using snowshoe hares in a field enclosure; identification and synthesis of a refined repellent based on bioassays and to test the encapsulated synthate in conifer plantations.
PROGRESS:	Odors from several predators were tested on nursery grown lodgepole pine and white spruce seedlings and willow browse. Lynx-bobcat fecal and weasel scent gland odors have clearly suppressed hare browsing for several days while control seedlings were essentially exhausted after one day.
FUTURE WORK:	Identification and synthesis of the active repellent odors in the predator formulations will be conducted. In future this project will be financed from contract research funds.

RENEWED PROJECTS

PLANTING TECHNIQUES FOR BARE ROOT AND CONTAINER SEEDLINGS

INVESTIGATOR:	L. Brace, Northern Forest Research Centre
DURATION OF PROJECT:	Ten years
OBJECTIVES:	The objectives are to identify the best combination of seedling size and planting tools on the survival and subsequent growth of lodgepole pine and white spruce seedlings.
PROGRESS:	All seedlings required for experimental planting were grown in the Pine Ridge Nursery. A destructive sampling of 20 seedlings was taken from each size class when the seedlings were moved out to the shadeframes. A second sampling of lodgepole pine seedlings was conducted prior to fall planting. Spring planting was carried out at the end of May and fall planting of pine during the first week of September. All seedlings planted in 1980 fall and 1981 spring were measured in September 1981. No early trends relating to container volume or original seedling size were noted. Average survival of fall and spring planted seedlings were high, 93% and 99% respectively.
FUTURE WORK:	Annual planting of various seedling sizes of lodgepole pine and white spruce will be continued and growth and survival assessment of previously planted seedlings will be carried out. This project will be financed from contract research funds in future.

VARIATION OF ANATOMICAL AND PHYSICAL PROPERTIES OF WHITE SPRUCE AND LODGEPOLE PINE IN ALBERTA

INVESTIGATOR:	Dr. M.M. Micko, University of Alberta
DURATION OF PROJECT:	Three years
OBJECTIVES:	The objectives were to characterize the natural variation of wood properties, particularly specific gravity and tracheid length of white spruce and lodgepole pine growing in Alberta, and establish base line values.
PROGRESS:	Fibre length determinations were carried out for lodgepole pine. White spruce stands at two elevations in Hinton and High Level were sampled. There were no significant differences in specific gravity for white spruce between the two geographic areas. However, significant differences were found between stands at different elevations in Hinton, while no significant differences existed at High Level. Tracheid lengths of white spruce were measured. It was also found that specific gravity of white spruce increased from the base to the top of tree contrary to lodgepole pine.
FUTURE WORK:	Additional sampling of white spruce and lodgepole pine will be conducted. Pilodyn wood tester will be used to determine wood specific gravity of standing trees. Statistical analyses of all data will be completed and a report prepared for the Forest Products Research Society Annual Meeting.

FOREST DEVELOPMENT RESEARCH TRUST FUND

FINANCIAL STATEMENTS

MARCH 31, 1982

Auditor's Report

Balance Sheet

Statement of Revenue, Expenditure and Unexpended Funds

Notes to the Financial Statements

ALBERTA LEGISLATURE

OFFICE OF THE AUDITOR GENERAL

AUDITOR'S REPORT

To the Council of the Forest Development
Research Trust Fund

I have examined the balance sheet of the Forest Development Research Trust Fund as at March 31, 1982 and the statement of revenue, expenditure and unexpended funds for the year then ended. My examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as I considered necessary in the circumstances.

In my opinion, these financial statements present fairly the financial position of the Fund as at March 31, 1982 and the results of its operations for the year then ended in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

C.A.
Auditor General

Edmonton, Alberta
August 19, 1982

FOREST DEVELOPMENT RESEARCH TRUST FUND

BALANCE SHEET

AS AT MARCH 31, 1982

	1982	1981
ASSETS		
Current:		
Deposits in trust (Note 3)	$297,950	$261,793
Advances receivable	-	4,835
	$297,950	$266,628
LIABILITIES		
Current:		
Research grants payable	$ 53,994	$ 21,728
Accounts payable	460	575
Due to the Province of Alberta (Note 4)	18,976	69,684
Unexpended funds, Statement B	224,520	174,641
	$297,950	$266,628

The accompanying notes are part of these financial statements.

FOREST DEVELOPMENT RESEARCH TRUST FUND

STATEMENT OF REVENUE, EXPENDITURE AND UNEXPENDED FUNDS

FOR THE YEAR ENDED MARCH 31, 1982

	1982	1981
REVENUE		
Contributions by the Province of Alberta (Note 4)	$150,000	$150,000
Interest	49,764	24,538
Contributions from industry	-	5,000
Donations	115	60
	199,879	179,598
EXPENDITURE		
Research grants	130,564	79,741
Council members' fees and expenses	460	575
	131,024	80,316
Excess of revenue over expenditure	68,855	99,282
Less: Due to the Province of Alberta (Note 4)	18,976	69,684
	49,879	29,598
Unexpended funds at beginning of year	174,641	145,043
Unexpended funds at end of year	$224,520	$174,641

FOREST DEVELOPMENT RESEARCH TRUST FUND

NOTES TO THE FINANCIAL STATEMENTS

MARCH 31, 1982

Note 1 Authority

The Forest Development Research Trust Fund operates under the authority of the Forest Development Research Trust Fund Act, Chapter F-13, Revised Statutes of Alberta 1980.

Note 2 Significant Accounting Policies and Reporting Practices

Administration Expenses

Salaries, accommodation, and other overhead costs incurred in the administration of this Fund have been paid by the Province of Alberta and are not reflected in these financial statements.

Changes in Financial Position

A statement of changes in financial position is not provided as disclosure in these financial statements is considered to be adequate.

Note 3 Deposits in Trust

Deposits in trust consist of deposits in the Consolidated Cash Investment Trust Fund of the Province of Alberta.

Note 4 Due to the Province of Alberta

The Department of Energy and Natural Resources provides contributions annually for research and council members' expenditure incurred by the Fund. Where expenditure is less than the contributions in any given year, the balance is repayable to the General Revenue Fund of the Province.

	1982	1981
Contributions by the Province of Alberta	$150,000	$150,000
Expenditure	131,024	80,316
Due to the Province of Alberta	$ 18,976	$ 69,684

Note 5 Commitments

As at March 31, 1982, the Fund had research grant commitments totalling $137,548 (1981 $80,900).

Note 6 Approval of Financial Statements

These financial statements were approved by management on August 19, 1982.

POOR

QUALITY

ORIGINAL